

Notice of Allowability

Application No.

10/666,691

Examiner

Jayesh A. Patel

Applicant(s)

WU ET AL.

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 07/13/2007.
2. ☒ The allowed claim(s) is/are 2-18.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

JINGGE WU
SUPERVISORY PATENT EXAMINER

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Claim 1 is cancelled.

Claims 2,3,5,8 and 9 have been amended.

Claim 8 is dependent on Claim 1. Claim 1 is cancelled and a Claim cannot depend from a cancelled Claim 1. For the advancement in the prosecution the Examiner has made an assumption for Claim 8 to depend from Claim 9 instead. The following correction is required before the payment of the issue fee.

Reasons for Allowance

The following is an examiner's statement of the reasons for allowance. The Claimed subject matter in Claim 9 is indicated allowable over the closest prior arts on record Camus (US 6516087) and John (GB 2316255). Both Camus and John disclose a method for aligning a first image and a second image, comprising: (1) selecting a first pixel in the first image and a second pixel in the second image that overlap when the first image and the second image are aligned with a camera motion;(2) if the first and the second pixels are edge

pixels, incrementing a correlation value between the first image and the second image for the camera motion;(3) if only one of the first and the second pixels is an edge pixel, decrementing the correlation value between the first image and the second image for the camera motion;(4) repeating steps (1) to (3) for other overlapping pixels in the first image and the second image to determine the correlation value between the first image and the second image for the camera motion.

Camus and John however do not disclose (5) repeating steps (1) to (4) for other camera motions to generate correlation values for the other camera motions; and (6) selecting a group of the camera motions generating large correlation values hence it is allowable subject matter. Claims 2-12 depends on Claim 9 therefore they are allowable.

Both Camus and John also do not disclose a method in Claim 13 for aligning a first image and a second image, comprising:(1) generating a plurality of correlation values for a camera motion, the camera motion comprising a translation and a range of rotation after the translation, a correlation value being defined by the mathematical equation of Claim 13 wherein $Corr$ is the correlation value; W is an overlapping region between the first image and the second image under the camera motion; p and p' are overlapping points in the overlapping region from the first image and the second image, respectively; $L(p)$ is a first Laplace gradient of the first point; $L'(p')$ is a second Laplace gradient of the second point; $G(p)$ is a first Sobel gradient of the first point; $G'(p')$ is a second

Sobel gradient of the second point; T is a first Sobel threshold for detecting an edge in the first image; and T' is a second Sobel threshold for detecting an edge in the second image.(2) selecting a maximum correlation value from the plurality of correlation values for the camera motion; (3) repeating (1) and (2) for other camera motions to generate maximum correlation values for the other camera motions; (4) generating a map comprising the maximum correlation values at coordinates of their translation vectors; and (5) selecting a group of the maximum correlation values that form peaks in the map, therefore Claim 13 is allowable. Claims 14-18 depend on Claim13, hence they are allowable.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jayesh A. Patel whose telephone number is 571-270-1227. The examiner can normally be reached on M-F 7.00am to 4.30 pm (5-4-9). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on 571-272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public

Art Unit: 2624

PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jayesh Patel
08/03/07

JP

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SUPERVISORY PATENT EXAMINER